July 1, 2013

VIA EMAIL: Nfeger@waterboards.ca.gov

Naomi L. Feger, Environmental Program Manager
Division Chief - Planning
Regional Water Quality Control Board, San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Re: Comment Letter – A Review of Scientific Approaches Supporting NNE Assessment Framework Development for San Francisco Bay (Draft April 2013)

Dear Ms. Feger:

The City of Sunnyvale appreciates the opportunity to submit comments on "*A Review of Scientific Approaches Supporting NNE Assessment Framework Development for San Francisco Bay.*" Sunnyvale recognizes that the Nutrient Numeric Endpoint (NNE) process for developing nutrient water quality objectives for San Francisco Bay is a complex one.

Sunnyvale supports the report's recommendation to "*rely most heavily on the cause-effect approach*" versus other potential technical approaches that "*are simply untenable*" for complex estuaries like San Francisco Bay. (p.8) For subembayments like the Lower South Bay (LSB), there are numerous "*co-factors*" such a clam grazing, that confound establishing simple relationships between nutrient loading/concentration and phytoplankton biomass (i.e. eutrophication). As noted in the report, "*these co-factors can play a larger role in mitigating estuarine response to nutrient loads or concentrations, blurring or completely obscuring a simple prediction of primary productivity limited by nutrients.*" (p. 8)

Sunnyvale also supports the "key tenets of the NNE approach" (pp. 8-9). In particular that:

"The intent of the NNE framework is to control excess nutrient loads to levels such that the risk or probability of impairing the designated uses is limited to a low level. If the nutrients present – regardless of actual magnitude – have a low probability of impairing uses, then water quality standards can be considered met." Also, that:

"1. Ecological response indicators provide a more direct risk-based linkage to beneficial uses than nutrient concentrations or loads alone. Thus the NNE framework is based on the diagnosis of eutrophication or other adverse effects and its consequences rather than nutrient over enrichment per se.

2. A weight of evidence approach with multiple indicators will produce a more robust assessment of eutrophication."

Dissolved Oxygen Objectives

Sunnyvale understands that there are many actions that will need to occur before the NNE assessment framework will be finalized. The primary comment that the City has moving forward with the NNE framework regards the statement on page 2 that "*Work to review the science supporting dissolved oxygen objectives will be completed separately from this effort …*"

Dissolved oxygen (DO) is a key component of the various assessment frameworks reviewed in this report. DO was recommended as a primary indicator in the "*NNE Development for San Francisco Bay Estuary: Literature Review and Data Gaps Analysis*" report (McKee et al. 2011) as is referenced in this report. Sunnyvale suggests that the report provide more detail on how and when the necessary work will be conducted to develop refined DO assessment criteria for use in the NNE Assessment Framework, if DO is likely to be used as a numeric endpoint.

This is a critical issue since the Basin Plan does not currently provide implementation guidance on how to assess compliance with the current 5.0 mg/L water quality objective (WQO) (for the Bay south of the Carquinez Strait). Absent such guidance, this single DO WQO has been interpreted in the past to be applicable at all times, at all depths, and in all locations. This could be problematic if used as a criterion for assessing impairment, for example in Lower South Bay sloughs, where at certain times and locations there can be low DO conditions due for example to naturally occurring sediment oxygen demand and tidal influences. Since 1979, following installation of nitrification and filtration facilities, discharge of oxygen demanding substances from the three LSB wastewater treatment plants has been reduced to *de minimus* levels.

The Southern California Coastal Water Research Project (SCCWRP) recently finalized a report for the State Water Board (SWB) titled "*Science Supporting Dissolved Oxygen Objectives in California Estuaries*" (Technical Report 684 – December 2012). The report addressed all the estuaries in California other than San Francisco Bay (SFB). However, the recommendations regarding application and assessment of DO criteria appear equally applicable to SFB, whether they are developed independently or in concert with this other estuarine NNE effort.

The above referenced SCCWRP report Section 6.4 *Application of Dissolved Oxygen Criteria* (pp. 67-68), calls out four points to consider addressing regarding DO:

1) Assessment;
2) Allowances for natural hypoxia and muted tidal flushing;
3) Considerations for short-term fluctuations in DO; and
4) Considerations for multiple, competing beneficial uses.

Pertinent background text and the recommendations regarding key point 1) from the above cited SCCWRP report, are cited below:

6.4 Application of DO Criteria

While USEPA guidance is intended to establish numerical values that are protective, it does not provide details as to how to evaluate a body of water with respect to the potential for DO limitations, or what constitutes "impaired" with respect to overall conditions associated with a given waterbody. ***We recommend that this guidance be developed to ensure consistent implementation of DO objectives across Regional Boards.*** *Such guidance might include details associated with sampling design, such as*

methodology, frequency and spatial extent. Ideally, data from a properly executed sampling plan should readily lend themselves to interpretation of the frequency and extent of observed exceedances, an indication of the impaired status of a given waterbody from temporal and spatial perspectives, and constructive follow-up activities designed to reduce impacts. Some points to consider include:

*1) **Assessment.** A protocol should be developed that specifies where, when and how samples should be collected. In particular, it is important with DO to specify whether sampling a single depth is sufficient, or whether samples should be collected at the surface, mid-depth and bottom, or integrated over depth. The assessment protocol should provide clear guidance regarding the temporal and spatial extent of sampling, the density of data (grab or continuous samples), and the targeted assessment window (seasonal or year round) that are required in order to make an assessment. For example, is one sample/site sufficient to support a designation of impairment, or is there consideration of the relative spatial extent (both vertically and horizontally) of exceedances when considering the water body as a whole?*

The City of Sunnyvale appreciates the opportunity to provide these comments on "*A Review of Scientific Approaches Supporting NNE Assessment Framework Development for San Francisco Bay*." If you have any questions, please contact Dr. Tom Hall of EOA at (510) 832-2852 x110 or me at (408) 730-7808.

Sincerely,

Melody Tovar, P.E.
Regulatory Programs Division Manager

cc: Martha Sutula, SCCWRP
David Williams, BACWA
David Senn, SFEI
Tom Hall, EOA